Factors Associated with Patient Delay in Diagnosis of Pulmonary Tuberculosis in a District

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ABSTRACT

Background: Tuberculosisis one of the major public health problems that is affecting large number of people each year including Nepal.

Methods: A descriptive cross sectional study was conducted in Sunsari district of Nepal. The patients with pulmonary tuberculosis patients from 14 DOTS centers in the District were interviewed. Face to face interview by using structured questionnaire was used for data collection. Extra pulmonary tuberculosis and patients under Category II were excluded from the study. Data entry and analysis was carried out in SPSS version 16. Pearson Chi square test was used to test the association between outcome variable with different categorical independent variables.

Results: Out of the total 215 patients, 91 (65.6%) were male, 109 (50.7%) were from rural residence, 69 (32.1%) were illiterate, 147 (68.4%) were married and 141 (66%) were sputum positive. The overall median patient delay was 42 days. About 145 (67.4) of the patients had delayed their first consultation for more than 30 days. The patient delays were 56 out of 68 (82.4%) in age above 50 years patients, 121 out of 161 (75.2%) in married patients, 37 out of 45 (82.2%) in Kirats, 55 out of 69 (72.7%) in illiterates and 95 out of 124 (76.6%) in those who travel the distance of 2 or more km from the place of residence to health facility.

Conclusions: Since the time duration before the treatment and diagnosis in TB patients is long, this study emphasizes the need of awareness about symptoms of tuberculosis among general population.

Keywords: district; factors for delay; patient delay; tuberculosis.

INTRODUCTION

The South East Asia region carries one-third of the global burden of tuberculosis (TB).[1] Although National Tuberculosis program (NTP) has implemented Directly Observed Treatment Short Course (DOTS) strategy for TB treatment, 23 per 100,000 people still die from TB every year in Nepal.[2] In 1991, World Health Assembly resolution recognized TB as a major global health problem.[3] On an average about 50% of the patient will die within 5 years and 25% will remain sick with chronic infectious TB without the treatment.[4]

TB diagnosis can be delayed when patients postpone seeking care until much after the onset of symptoms or when health providers take more time than required to diagnose patients seeking care.[5] Delayed presentation is a major problem contributing to the high burden and transmission of tuberculosis in most developing countries.[6]

The objective of the study was to assess the factors associated with the patients delay in diagnosis of pulmonary TB patients in a district of Nepal.

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METHODS

A descriptive cross sectional study was conducted in Sunsari district from September 2010 to January 2011. The study populations were the pulmonary tuberculosis cases registered in 14 DOTS centers of Sunsari district who were under anti tuberculosis treatment. Patient who were registered in DOTS centers during the data collection period were interviewed. All the confirmed pulmonary tuberculosis patients on anti tuberculosis treatment from all DOTS centers were included in the study. Cases not willing to participate, cases under category II treatment and extra pulmonary tuberculosis cases were excluded from the study.

Face to face interview technique was conducted as a method of data collection. Pre-tested semi structured questionnaire was used as a tool to collect data. Data entry and analysis was carried using SPSS version 16.0. Both descriptive and statistical analyses were used. Pearson chi square test was used to detect association of outcome variable with different categorical independent variable. A level of $P<0.05$ was set to show statistically significant.

RESULTS

The socio demographic characteristic of the study participants: A total of 215 participants were included in the study. The socio demographic characteristic of the participants is given (Table1). The mean age of the respondents was 39.6 years. Of the total patients, 147 (68.4%) were married and109 (50.7%) were from rural area. Out of total respondents, unemployed 47(21.8%), housewives 46 (21.4%), agriculture 35 (16.3%) were major occupational categories.Out of total respondents, 141 (66%) were sputum smear positive tuberculosis status and rest were sputum smear negative. Out of total patients 120 (55.8%) were smokers and rest non smokers and 86 (40%) were alcohol users. Those of the smokers, 57 (60%) were smoking less than five cigarettes per day and 38 (40%) more than five cigarettes.

Knowledge about tuberculosis: Only 49 (22.8%) patientssaid that the cause of the TB was due to microorganism and 106 (49.3%) of the patients had no idea about the causation of the TB. Total 161 (74.9%) of the respondents said that TB is communicable disease. Out of total, 161 (74.9%) patients said sputum test, 7 (36.7%) chest x- ray, 28 (13%) blood test and 16 (7.4%) physical checkup are the diagnostic of tuberculosis. Almost all respondents said that TB is curable through treatment by anti tuberculosis treatment. About 204 (94.5%) of the respondents answered that duration of treatment is six month. Only 142 (61.9%) of the respondents mentioned cough for more than two weeksas the symptoms of TB.

Table 1. Demographic and socio-economic characteristics of respondents	
Characteristics	n (%)
Age group(years)	
15-34	91 (42.4%)
35-49	56 (26.0%)
>50	68 (31.6%)
Mean=39.6 min= 15 max=72	
Sex	
Male	141 (65.6%)
Female	74 (43.4%)
Ethnicity/Caste	
Brahmin/Chhetri	37 (17.2%)
Janjati	80 (37.2%)
Tharu/Tarai middle caste	64 (29.8%)
Muslim/Dalits	34 (15.8%)
Education	
Illiterate	69 (32.1%)
Literate	146 (67.9%)
Place of residence	
Rural	109 (50.7%)
Urban	106 (49.3%)
Monthly income (NRs.)	
0-5000	65 (30.2%)
>5000	150 (69.8%)
Mean=8311.63 SD= 4683.75 Min=1000 Max=3000	

Patients delay: Median patient delay for the first consultation to any health facility was 42 days (Table 2). Total 145 (67.4%) patients consulted health care provider only after 30 days of recognizing symptoms. Of 145 delayed patients, the reasons for the delays for the first consultation were domestic preoccupation 95 (65.5%), lack of knowledge about tuberculosis 63 (43.4%), poor socioeconomic condition 15 (18.3%). Out of 215 patients, 95 (45.1%) patients consulted government health facility for the first time of consultation and only 10(4.7%) patients visited traditional healer for the first consultation after the onset of symptoms. A total of 170 (79.1%) patients were diagnosed at the government health facilities and rest 45 (20.1%) patients were diagnosed on other health facilities than government health facility.

Analytical findings: Patients delay was found more in age group 50 years and above 82.4% (56 out of 68 patients) than below 50 years age group 60.5% (89 out of 147 patients) (Table 3). The longer patient delay was found in female 73% (54 out of 74 patients) than male 64.5% (91 out of 141 patients). Similarly married 75.2% (121 out of 161 patients) were found to have more delayed than unmarried 44.4% (24 out of 54 patients).

Table 2. Reasons of patient delay for the first consultation with health care providers	
Age	n (%)
<30	70 (32.6%)
>30	145 (67.4%)
Median=42 Min=5 Max=365	
Reasons for the patient's delay* (n=145)	
Domestic preoccupation	95 (65.5%)
Lack of knowledge about TB	63 (43.4%)
Poor economic condition	15 (18.3%)
Other (dhamis, study, abroad)	9 (6.2%)
First action by the patients on recognizing symptoms	
Self medication	14 (6.5%)
Traditional healer	10 (4.7%)
Drug store	31 (14.4%)
Private clinic	63 (29.3%)
Government health facility	97 (45.1%)
Reasons for seeking first consultation at above mentioned centres	
Convenient	107 (49.8%)
Easy to get service	128 (59.5%)
Belief on traditional healer	10 (4.7%)
Confirmation of TB diagnosis done	
Government HF	170 (79.1%)
Private clinic	45 (20.9%)

Note * Multiple response (total percentage may be more than 100%)

Table 3. Relationship between demographic factors and patient delay for the first consultation with health care providers			
Factors	<30 days	> 30 days	p-value
	n (%)	n (%)	
Age (years)			
15-49	58 (39.5%)	89 (60.5%)	0.002*
>50	12 (17.6)	56 (82.4%)	
Sex			
Male	50 (35.5%)	91 (64.5%)	0.210
Female	20 (27.0%)	54 (73.0%)	
Marital Status			
Married	40 (24.8%)	91 (64.5%)	0.000*
Never married	30 (55.6%)	54 (73.0%)	
Religion			
Hindu	53 (39.3%)	82 (60.7%)	0.039*
Muslim	5 (31.2%)	11 (68.8%)	
Buddhism	4 (21.1%)	15 (78.9%)	
Kirat	8 (17.8%)	37 (82.2%)	
Ethnicity/Caste			
Brahmin/Chhetri	10 (27.0%)	27 (73.0%)	0.029*
Janjati	18 (22.5%)	62 (77.5%)	
Tharu/Tarai middle caste	28 (43.8%)	36 (56.2%)	
Dalit/Muslim	14 (41.2%)	20 (58.8%)	
Education			
Illiterate	14 (20.3%)	55 (79.7%)	0.008*
Literate	56 (38.4%)	90 (61.6%)	

Note * Significant at p < 0.05

The patient delay was found 74% (26 out of 35 patients) in agriculture, 72.3% (34 out of 47 patients) in unemployed, 71.7% (33 out of 46 patients) in housewives.Similarly patient delay for family monthly income of NRs ≤ 5000 and NRs > 5000 were 70.8% (46 out of 65 patients) and 66% (99 out of 133 patients) respectively. Longer patient delay was found in distance of > 2km 76.6% (95 out of 124 patients) than distance < 2km 54.9% (50 out of 91 patients)(Table 4).

Table 4. Relationship between economic factors and patient delay for the first consultation with health care providers			
Factors	<30 days	> 30 days	p-value
	n (%)	n (%)	
Occupation			
Unemployed	13 (27.7%)	34 (72.3%)	0.290
Agriculture	9 (25.7%)	26 (74.3%)	
Daily wage worker	10 (33.3%)	20 (66.7%)	
Housewife	13 (28.8%)	33 (71.7%)	
Others(students)	25 (43.9%)	32 (56.1%)	
Family monthly income(NRs)			
< 5000	19 (29.2%)	46 (70.8%)	0.493
>5000	34 (34.0%)	99 (66.0%)	
Distance (Km)			
<2	41 (45.1%)	50 (54.9%)	0.001*
>2	29 (23.4%)	95 (76.6%)	
Residence			
Urban	32 (29.4%)	77 (70.6%)	0.310
Rural	38 (34.5%)	68 (71.5%)	

Note * Significant at p < 0.05

The pulmonary TB patients having no knowledge of about the cause of TB delayed more than the patients who have knowledge about the cause of TB. The pulmonary TB patients with sputum smear positive 76.6% (108 out of 141 patients) were found to have more delayed for the first consultation and the sputum smear negative patients 50% (37 out of 74 patients).

DISCUSSION

This study revealed that patient delays consist of 76.6% of the total delay. In this study median patients delay for the first consultation to any health facility was 42 days. According to the study conducted in Nepal by Basnet R et al the median patient delay was 50 days and patient delay represented 73% of total delay.[7] The result was consistent with the study conducted in Ethiopia where the median patient delay was 31 days.[6]

In this study, about 67.4% of the patients consulted health care provider only after 30 days of recognizing symptoms. A study conducted in Ethiopia, 53% had

delayed consultation for 30 days and longer.[6] According to the study conducted at government specialist hospital in Nigeria, the overall median delay in seeking treatment among study subjects was 60 days with 61.8% patients delaying for more than a month.[8]

The reasons for the patients delay for the first consultation in this study were domestic preoccupation, lack of knowledge about tuberculosis, poor socioeconomicstatus; patients did not know where to go for seeking care after the onset of symptoms.

The present study found that 52.6% of the patients consulted government health facility for the first time of consultation followed by private clinic (29%), drug store (14.4%). This may be due to increase awareness program on TB by government of Nepal. About 4.7% visited traditional healer for the first consultation. In the study conducted in Nepal by Basnet R et al government health facilities were contacted by 22.8% of the participants to seek their first advice, and traditional healers by 4.2%.[7] The study in Ghana by Lawn S at al found that the number of consultation before diagnosis was 4.2 for all patients. About 85% sought help from conventional medical practice and 9% consulted traditional healer first. Forty seven percent of the patients consulted more than one category of medical practitioner before diagnosis was made.[9]

This study showed that only about 22.8% had knowledge that the TB is caused by microorganism called *Mycobacterium tuberculosis*. Majority of the respondents cited cough for more than two weeks (61.9%), fever (41.9), haemoptysis (37.2%), and chest pain (30.7%) as the symptoms of the tuberculosis. According to Khan J at al in Pakistan the majority of the private practitioner and physicians knew that cough, fever and weight loss were the main symptoms of TB, but less than half knew that blood in sputum, poor appetite and chest pain were associated with the disease.[5]

The pulmonary TB patients having no knowledge of about the cause of TB delayed more than the patients who have knowledge about the cause of TB. According to study in Tanzania by Kilale et al 60% of the respondents had good knowledge on the correct duration of tuberculosis treatment.[10]

According to the study in Cambodia, majority of the patients (95.53%) knew about the most useful method to detect TB, 93.83% of the patients knew that TB disease can be cured by anti TB drugs. Total 72.63% of the total patients know the duration of completion of the TB treatment, 73.18% knew the common side effect of the TB drug and 99.44% answered that TB services were available at health center.[11]

The person who helped patients to reached the treatment center for the first time were their spouse (34.4%), parents (19.5%) and son/daughter (13.9%). About 21.4% of the patients visited the treatment center alone. About 79.1% of the patients were diagnosed at the government health facilities. According to study in Tanzania by Kilale et al the majority of the patients (68%) visited public health facilities for treatment as their first action.[10]

In this study delayed was found more in those patients whose decision for the treatment was made by relatives (83.8%) than decision made by self (68.9%), spouse (60%) and parents (53.1%). A study conducted in Ethiopia by Mesfin M et al revealed that about 64% patients decided to visit health facilities by themselves. Thirty-six percent of the patients visited a public health facility because they were advised to by members of their family, private practitioners or volunteer community health workers. Forty three percent of patients were accompanied by at least one person when they arrived at the public health facility.[6]

In this study the pulmonary tuberculosis patients having sputum smear positive (76.6%) were found to have delay more than one month for the first consultation than the sputum smear negative (50%) patients. This means patients consult health institution with laboratory facilities only at the advanced stage of the pulmonary TB. Similar result was found in Nepal, sputum smear negative participants had significantly lower risk of patient delay.[7] The risk of prolonged delay was significantly higher for sputum smear positive pulmonary patients than sputum smear negative pulmonary patients.[6]

The patients delay was found more in age group 50 years and above (82.4%) than below 50 years (60.5%) age group.Patient delay was found more in males (73%) than in female (64.5%). Married patients (75.2%) were found to have more delayed than unmarried patients (44.4%). Similar results were found in studies in Kenya.[12]

The patient delay was found 74% in agriculture, 72.3% in unemployed, 71.7% in housewives. Similarly patient delay for family monthly income of NRs ≤5000 and NRs > 5000 were 70.8% and 66% respectively.

Association of patients delay was found significant with illiteracy, lower family income residing ≥2 km from a health facility in South India. Similarly a study conducted in Ethiopia found prolonged patient delay was significantly associated with literacy, rural residence, type of TB disease, occupation. No significant association was found between prolonged patient delay and monthly income. Prolonged delay was significantly higher among illiterate patients than those who had

completed secondary school. Rural patients were more likely to have prolonged delay than urban patients.[6] Marital status and distance to clinic had significant effect on patient delay in Kenya.[12]

The present study found that the patients who travel more than 2 km (76.6%) were more delayed than the patients who covered less than 2 km distance (54.9%). The result was similar to a study in South India where longer patients delay was associated with distance of patient's residence >2 km from a health facility.[13]

The median health care provider delay and treatment delay were 10 and 0 days respectively. The median total delay was 56 days with range of 8 to 378 days. About 60% of the patients were delayed more than one week for the diagnosis of tuberculosis by the health care providers. The median health care provider delay was low as compared with the study conducted by Basnet R et al where the median health system delay was 18 days.[7] This could be due to improved laboratory diagnosis of sputum smear test in the health institutions. A study from south India by Rajeshwory R et al revealed that health system and total delays were 23 and 60 days, respectively.[13]

CONCLUSIONS

Patient and health care provider delays contribute significantly to delays in TB patients accessing treatment. The high occurrence of delayed consultation among pulmonary patients is a major challenge for TB control program. Age above 50 years, distance, religion, marital status, caste, and literacy were significantly associated with the patient delay in consultation. These risk factors should be addressed through health education not only for tuberculosis patients but also within the communities.

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